Space Weather Forecast

Issued on Monday, 16 May 2022 at 13:24 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor to Moderate radio blackouts. Chance of G1/Minor Storms, most likely late day 3 (18th).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low over the past 24 hours with no Moderate flares or stronger observed. There are a number of sunspot groups on the visible side of the solar disc. The largest of which is in southwest disc, whilst a further group of smaller but potentially more active regions are positioned in the northwest. No Earth directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been Elevated for much of the past 24 hours due to the arrival of the fast winds from a coronal hole. The magnetic field has been Weak to Moderate in strength, with the important north-south component generally positive (northward) but with periods of weakly negative pointing field. Geomagnetic activity was Quiet to Unsettled (Kp 1 to 3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is forecast to be Low to Moderate, with Moderate-class flares becoming more likely, and a slight chance of a Strong-class flare. The flare risk may trend a little higher through the period owing to potentially further active regions rotating around the northeast limb.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current elevated solar winds are expected to decline from day 2 (17th) onward, before the arrival of the fast winds of another coronal hole. This is currently expected late on day 3 (18th), however this is a low confidence forecast. Geomagnetic activity is currently Quiet with isolated Unsettled spells, and a slight chance of Active day 1 (16th), becoming mainly Quiet from day 2 (17th). Activity will likely increase to Unsettled to Active with a chance of G1/Minor Storms on day 3 (18th).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring. There is a slight chance of this count rate increasing due to any notable flares from the large sunspot on the disc.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	30	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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